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Title:

Do hippocampal volume and white matter hyperintensities predict remission following ECT in late life depression?

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Objective: To examine quantitative MRI measures of hippocampal volume and total white matter hyperintensities in predicting clinical outcome following electroconvulsive therapy (ECT) in late life unipolar depression (LLD).

Background: It has been suggested that medial temporal lobe atrophy and white matter hyperintensities measured by visual rating scales contribute to poor ECT response in severely depressed elderly patients (Steffens et al., 2001; Oudega et al., 2011).

Methods: 43 elderly patients (70% female, mean age 73 years) with severe LLD (58% late onset, 51% psychotic depression) were treated twice weekly until remission (Montgomery-Åsberg Depression Rating Scale (MADRS) < 10). MADRS was obtained before ECT and 1 week after the last ECT. Normalised hippocampal volumes were obtained by manual segmentation of 3T structural magnetic resonance images pre-ECT. White matter hyperintensities were obtained from automated segmentation of fluid attenuated inversion recovery (FLAIR) images. We conducted a multiple logistic regression analysis with hippocampal volume and white matter hyperintensity volume as predictors and remission as outcome variable.

Results: Patients received a mean of 11.5 right unilateral ECT's (SD=3.71). One week after the last ECT, there was a significant decrease in MADRS scores ($p<0.0001$) with 33 patients (77%) in remission. We did not find any association between baseline hippocampal volume ($p=0.98$) or total white matter hyperintensity volume ($p=0.61$) and remission 1 week post ECT.

Conclusions: Contrary to earlier reports using visual rating scales, quantitative MRI measures of hippocampal volume and white matter hyperintensities did not predict clinical outcome following ECT.